UNITED NATIONS

ST

Secretariat

Distr.
GENERAL

ST/SG/AC.10/C.3/1997/36
25 April 1997

Original : ENGLISH

COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS
Sub-Committee of Experts on the Transport of Dangerous Goods
(Thirteenth session, Geneva, 7-17 July 1997, agenda item 3 (a))

DRAFT AMENDMENTS TO THE MODEL REGULATIONS

Use of frangible disks

Transmitted by the Expert from Spain

1.- It is proposed to add a new chapter 6.6.2.11.2 to chapter 6.6 of the restructured recommendations of the United Nations, which would say the following:

Frangible disks if used before a pressure relief valve as specified in point 6.6.2.8.3. shall meet at least the following two conditions:

- Not to be fragmentable
- Able to resist absolute vacuum

Justification: There exist some types of frangible disks, for example those made of graphite, which breaking due to overpressure, fracture into pieces and these pieces may obstruct or interfere with the correct operation of the pressure relief valve. On the other hand, the fragments of these frangible disks may fall into the product that the tank contains, producing a dangerous reaction in determined cases.

It has to be taken into account, that point 6.6.2.8.3 of the recommendations requests the compatibility of the material of the pressure relief devices, including frangible disks, with the material to be transported in the mobile tank; but the practice is that tanks equipped with those devices are type approved to transport lots of materials of different classes, consequently it is necessary that the frangible disk is compatible with all the materials to be transported and not only with a certain number of those materials. This is very difficult to attain, if the uses disks are not metallic frangible disks protected by a teflon lamina or another adequate corrosion-resisting metallic material such as HASTELLOY C or similar when the mobile tank is used to convey not only materials of class 6.1.3, but also products of class 8.

In some determined cases grids or other devices are used in order to avoid that fragments of a broken frangible disk may fall into the mobile tank, but this practice does not resolve the problem it makes it even worse, as the working surface of the pressure relief valve is reduced and enables the obstruction of the valve. Even though the before mentioned grids are made of stainless steel, they disappear in the presence of corrosive materials and therefore do not resolve the exposed safety problem.

On the other side, the operation of discharge of mobile tanks in some occasions is carried out by gravity or pumps, circumstances which may cause a vacuum, which not only damage the tank, but also may damage the frangible disk. Therefore the frangible disk must be designed to resist vacuum or contain a device which avoids, that a vacuum generated in the interior of the tank bursts off the disk or effects its performance.

Some codes, as for example ASME code prohibit for tanks, among other cases, the use of fragmentable frangible disks, but it is not forbidden by all the design codes. Therefore it is convenient and necessary to define better within the recommendations of the United Nations the frangible disks of mobile tanks used for the transport of hazardous goods. Specially if not only IMDG code but also ADR and RID requires that many chemical products must be conveyed in air-sealed tanks or those which are considered air-sealed. But at the same time these tanks mandatorily requires a pressure relief valve, which at the same time requires a frangible disk, of course with all technical safety and operational warranty.

2.- With the same arguments exposed above and for similar reasons it is proposed a new point 6.6.3.7.3.1 saying:

-<u>The used frangible disks shall meet at least the following two conditions</u>:

* <u>Not to be fragmentable</u>

* <u>Be able to resist absolute vacuum</u>

3.- It is also proposed to substitute in all the points of chapter 6.6 the term "frangible disk" by the term "burst disk" for being a more common and understandable term.